



29,157,603

GP 2904/24/03  
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MAR 12 2003

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**F A X****From: J. Kenneth Sanders, Sanders Marketing, Inc.****1953 Paula Dr., Hon. HI. 96816****Phone: (808)735-5435, email: ken@hawaii-aloha.com****Number of pages in this transmittal: 2**

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**Date: 3/7/03****To: USPTO attn: Cynthia Streeter****From: J. Kenneth Sanders Re: Patent application 29/157,603****Quiet Vertical Take Off & Landing (VTOL) Aircraft****Fax: (703) 308-5806****Classification: Priority - Please deliver immediately**

Hello Ms. Streeter: Thank you very much for your two phone calls to clarify the situation on our patent application for the UFOZ VTOL.

As you suggested, I am sending this to formally request that the last submission my son and I sent in, dated February 4, 2003, be considered the 'correct' version without mistakes, and just part of our original application for the UFOZ VTOL.

To clarify the situation, the 20-page version that we sent in on January 22, 2003, had a few small but important improvements over the application that we sent on December 31, 2000 and was accepted by you folks as of January 7, 2001 as # 29/157,603.

We thought that inasmuch as we hadn't heard anything yet from the USPTO that we could just make the slightly improved version the one that you reviewed and give us the patent for. I'm sorry to say that the new 20-page version didn't have the pages numbered, left out an important improvement, and at the beginning page it said The Idea Creatique, Inc., but on following pages it said UFOZ, Inc., for which the incorporation is not yet complete.

**Therefore, the Feb. 4, 2003 is the most recent and definitely the correct version, and definitely meant to be all part of the same 29/157,603 application.**

However, if the USPTO has to give us the new date of Jan. 7 or Jan. 22, 2003, I guess that's OK as long as nobody has tried to copy our idea during that year. We have had to show it to quite a few people to be able to obtain a Technical Assessment and to begin to raise funding for a prototype. Although they have signed Non-Disclosure Agreements, they may have been dishonest enough to



Page 2 - J. Kenneth Sanders to Ms. Cynthia Streeter, USPTO

make a few changes and submit their own patent...in which case we'd want to keep our original 1/7/01 date.

There is another important consideration. If the 18-month clock started on 1/7/01 and we only have until July 2003 to protect our invention internationally, that would be terrible. If the 18-month deadline for registering our patent in foreign countries doesn't begin until you folks tell us it begins, then we're OK. It will take us many months to raise the money for the attorneys and then for them to do all that legal work. We couldn't possibly do all that before July and therefore it would be better to have a 1/7/02 origination date instead of a 1/7/01 origination date.

We are finally going to be receiving the great Technical Assessment in a few days and will be sending you a Request For Privacy along with the TA. The first prototype we'll build will be for the military and all the first production models will go to the military branches, so National Security should be protected.

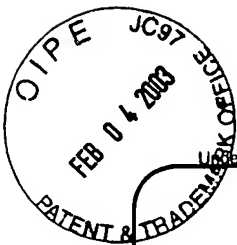
Thank you very much for you kind assistance in these important matters.

Aloha,

J. Kenneth Sanders

Chairman, CEO

Sanders Marketing, Inc., and The Idea Creatique, Inc.



02-06-03

290076

PTO/SB/21 (01-03)  
Approved for use through 04/30/2003. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	29/157,603	
	Filing Date	01/07/2003	
	First Named Inventor	John K. Sanders, Jr.	
	Art Unit	2900	
	Examiner Name	K. Samson	
Total Number of Pages in This Submission	25	Attorney Docket Number	

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ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input checked="" type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to Group
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input checked="" type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input checked="" type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Response to Missing Parts/Incomplete Application	Remarks	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<p>We apologize for submitting last week a 20-page Patent application that should have been this 21-page document. It is our \$165. mistake (check enclosed for re-submission) this time including the details we omitted previously. We would appreciate it very much if you would substitute this one for that one, and taking note of the \$327. of fees paid at that time, 1/22/03, on this same # 29/157,603. Thanks!</p>	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual	J. Kenneth Sanders
Signature	<i>J. Kenneth Sanders</i>
Date	2/4/03

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: _____			
Typed or printed	J. Kenneth Sanders		
Signature	<i>J. Kenneth Sanders</i>	Date	2/4/03

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Sanders, et al.

Quiet Vertical Take Off &amp; Landing (QVTOL) Aircraft

Inventors:

Sanders; John K. (CM, CA),  
Sanders; J. Kenneth (Hono, HI)

Assignee:

The Idea Creatique (Hono, HI)

Appl. No.:

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Filed: Jan.

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Current U.S. Class:

244/12.1; 244/12.2; 244/12.3; 244/  
23A; 244/23B; 244/45A; 244/91

Intern'l Class:

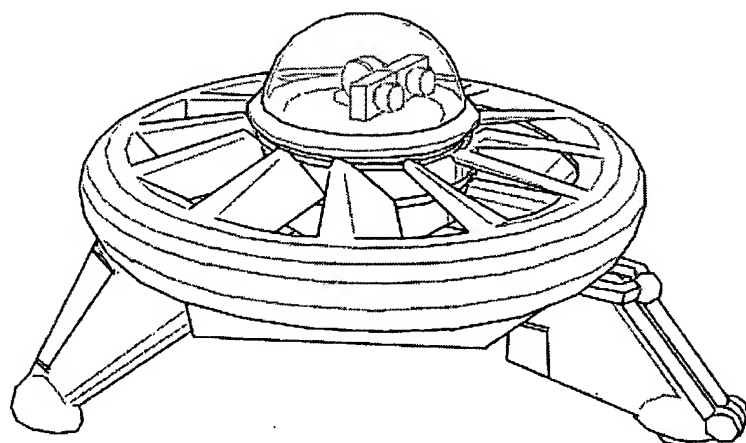
B64C 029/00-04

Field of Search:

244/12.13,225,122,17.19,12.2,  
23 C,12.1,36,23 A,23 R

## U.S. Patent Documents

6302230	09/16/2001	Kamen, Dean L., et al.
6270038	08/07/2001	Cycon; James P., et al.
6270036	08/07/2001	Lowe, Charles S., Jr.
6179247	01/30/2001	Milde, Jr., Karl F.
6113029	09/05/2000	Salinas, Luis A.
6086016	07/11/2000	Meek, Stanley R.
6082478	07/04/2000	Walter, Wm. C., et al
6073881	06/13/2000	Chen, Chung-ching
6068219	05/30/2000	Arata, Allen A.
6066611	05/23/2000	Day, Terence R.
6062508	05/16/2000	Black, Franklin E.
6053451	04/25/2000	Yu, Shia-Giow
6050520	04/18/2000	Kirla, Stanley J.
6016991	01/25/2000	Lowe, Jr., Charles S.
5971321	10/26/1999	Libengood, Ronald L.
5895011	04/20/1999	Gubin, Daniel
5890441	04/06/1999	Swinson,; Johnny, et al
5881970	03/16/1999	Whitesides, Carl W.
5873545	02/23/1999	Kapin, Victor M., et al
5836543	11/17/1998	Kunkel, Klaus



February ??, 2003

5836542

11/17/1998

Burns, David J.

5803199

09/08/1998

Walter, Wm. C.

5730391

03/24/1998

Miller, Jr., John A., et al

5730390

03/24/1998

Plichta, Peter, Buttner, Walter

5575438

11/19/1996

McGonigle; Kevin P., et al.

5520355

05/28/1996

Jones, Jack M.

5503351

04/02/1996

Vass; Gabor I.

5351911

10/04/1994

Neumayr, George A.

5344100

09/06/1994

Jaikaran, Allan

5318248

06/07/1994

Zielonka, Richard H.

5303879

04/19/1994

Bucher, Franz

5295571

11/09/1993

Blazquez, Jose M. R.

5213284

05/25/1993

Webster, Stephen N.

5203521

04/20/1993

Day, Terence

5178344

01/12/1993

Dlouhy, Vaclav

5170963

12/15/1992

Beck, Jr., August H.

5149012

09/22/1992

Valverde, Rene L.

5115996

05/26/1992

Moller, Paul S.

5102066

04/07/1992

Daniel, William H.

5064143

11/12/1991

Bucher, Franz

5054713

10/08/1991

Langley, Lawrence, et al

5046685

09/10/1991

Bose, Phillip R.

5039031

08/13/1991

Valverde, Rene L.

4976395

12/11/1999

vonKozierowski, Joachim

4955962

09/11/1999

Mell, Christian

4941628

07/19/1990

Sakamoto, Yujiro, et al

4824048

04/25/1989

Kim, Kyusik

4804156

02/14/1989

Harmon, Rodney D.

4804155

02/14/1989

Moller; Paul S.

4796836

01/10/1989

Buchelt, Benno

4795111

01/03/1989

Moller, Paul S.

4778128

10/18/1988

Wright; Herbert H., et al.

4566699

01/28/1986

Cucuzza; Joseph R.

4461436

07/24/1984

Messina; Gene

4457476

07/03/1984

Andresevit; Frank

4214720

07/29/1980

DeSautel, Edwin R.

4196877

04/08/1980

Mutrux, Jean L.

4193568

03/18/1980

Heuvel, Norman L.

4165848

08/28/1979

Bizzarri, Alfredo

4117992

10/03/1978

Vrana, Charles K.

4050652

09/27/1977

DeToia, Vincent D.

4023751

05/17/1977

Richard, Walter A.

4014483

03/29/1977

MacNeil, Roderick M.

3946970

03/30/1976

Blankenship; Ben F.

3933325

01/20/1976

Kaelin, Joseph R.

3871602

03/18/1975

Kissinger, Curtis D.

3785592

01/15/1974

Kerruish; Kermit D.

3774865

11/27/1973

Pinto, Olympio F.

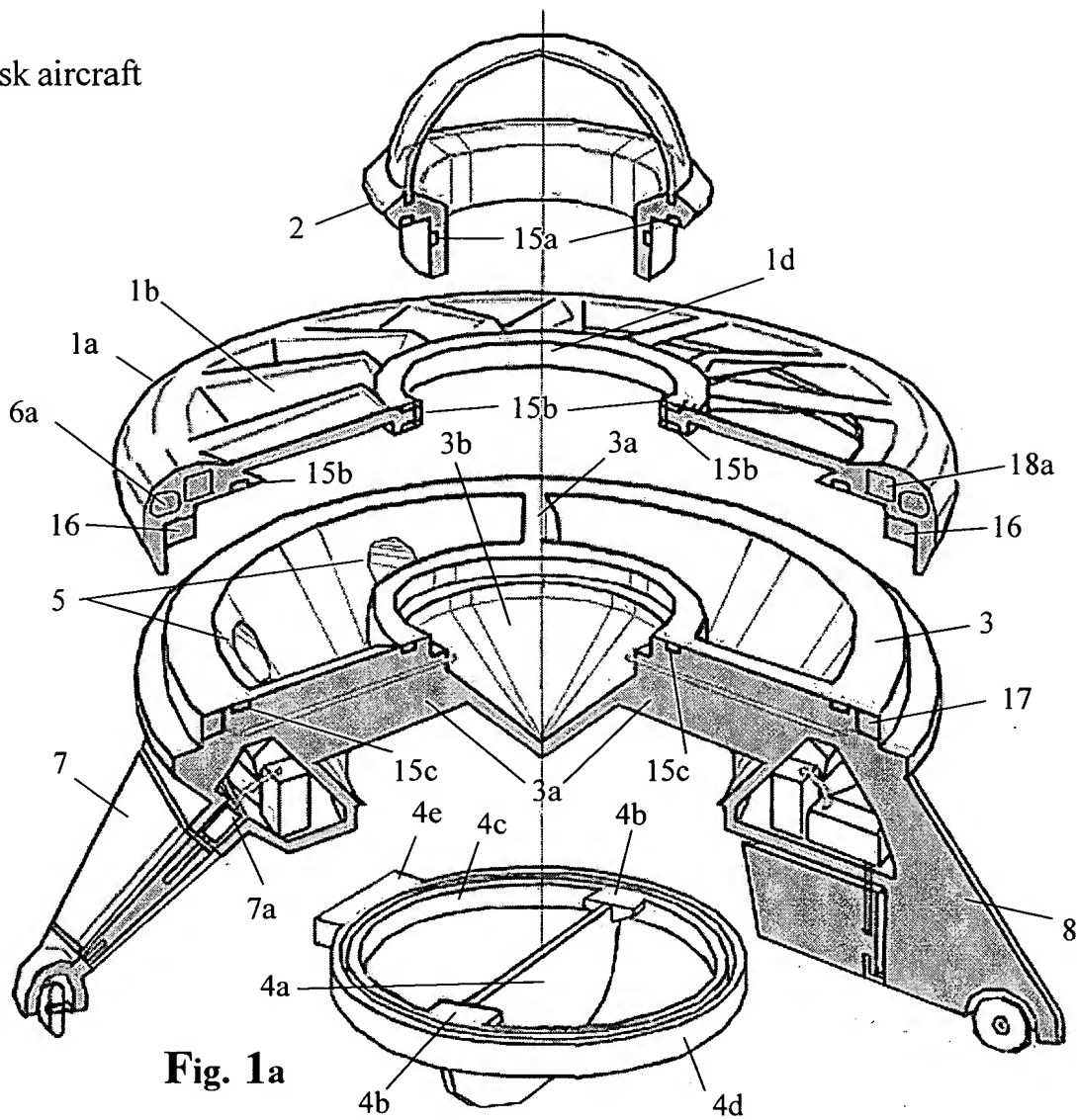
3750980	08/07/1973	Edwards, Samuel L.	1	2918230	12/22/1959	Lippisch, Alexander M.
3697020	10/10/1972	Thompson, Raymond V.		2912244	11/10/1959	Carr, Otis T.
3690597	09/12/1972	Di Martino, Renato		2876965	03/10/1959	Streib, Homer F.
3640489	02/08/1972	Jaeger, Karl		2863621	12/09/1958	Davis, John W.
3630470	12/28/1971	Elliot, Frederick Thomas	5	2838257	06/10/1958	Wibault, Michael
3614030	10/19/1971	Moller, Paul S.		2807428	09/24/1957	Wibault, Michael
3612445	10/12/1971	Phillips, Duan A.		2801058	07/30/1957	Lent, Constantin P.
3599902	08/17/1971	Thomley, John W.		2777649	01/15/1957	Williams, Samuel B.
3537669	11/03/1970	Modesti, James N.		2772057	11/27/1956	Fischer, John C.
3503573	03/31/1970	Modesti, James N.	10	2736514	02/28/1956	Ross, Robert S.
3469802	09/30/1969	Roberts, J. R., et al		2730311	01/10/1956	Doak, Edmond R.
3437290	04/08/1969	Norman, Francis A.		2718364	09/20/1955	Crabtree, E.L.
3432120	04/11/1969	Guerrero, E.		2619302	11/25/1952	Loedding, Alfred C.
3410507	11/12/1968	Moller, Paul S.		2567392	09/11/1951	Naught, Harold
3397853	08/20/1968	Richardson, Wm. B.	15	2432775	12/16/1947	Lennon, C. D.
3395876	08/06/1968	Green, Jacob B.		2431293	11/18/1947	Zimmermann, Charles H.
3387801	06/11/1968	Kelsey, C. W.		2377835	06/05/1945	Weygers, Alexander G.
3359678	12/26/1967	Headrick, E. E.		2282612	05/12/1942	Schultz, A. B.
3321156	05/23/1967	McMasters, Douglas Q.		1887411	11/08/1932	Johnson, R. B.
3312425	04/04/1967	Lennon, C. D., et al	20	1824195	09/22/1931	Chillingworth, R.
3243146	03/29/1966	Clover, P. B.				
3237888	03/01/1966	Willis, William M.				
3199809	08/10/1965	Modesti, James N.		1962058	Jun., 1971	DE.
3182929	05/11/1965	Lemberger, Robert A.		1331655	Sep., 1973	GB.
3177654	04/13/1965	Gradecak, Vjekoslav	25	339462	Apr., 1936	IT.
3130945	04/28/1964	de Seversky, A. P.		2012512	May., 1994	RU.
3124323	03/10/1964	Frost, John C. M.		2012511	May., 1994	RU.
3123320	04/03/1964	Slaughter, E. E.		263084	May., 1964	NL 244/12.
3103324	09/10/1963	Price, N. C.		2922221	Dec., 1980	DE 244/23.
3090580	05/21/1963	Kehlet, Alan B., et al	30	WO 92/01603	Feb., 1992	WO.
3082977	03/26/1963	Arlin, M. M.		6254032	July., 2001	CH.
3073551	01/15/1963	Bowersox, Joseph W.				
3072366	01/08/1963	Freeland, Leonor Z.				
3067967	12/11/1962	Barr, I. R.				
3066890	12/04/1962	Price, Nathan C.				
3065935	11/27/1962	Dubbury, J., et al				
3062482	11/06/1962	Frost, John C. M.				
3018068	01/23/1962	Frost, John C. M., et al				
2997254	08/22/1961	Mulgrave, Thomas P., et al				
2988303	06/13/1961	Coanda, Henri				
2953320	09/20/1960	Parry, Robert D.				
2949550	08/16/1960	Brown, Thomas T.				
2944762	07/12/1960	Lane, Thomas R.				
2939654	06/07/1960	Coanda, Henri				
2939648	06/07/1960	Fleissner, H.	45			
2937492	05/24/1960	Lehberger, Arthur N.				
2935275	05/03/1960	Grayson, Leonard W.				
2927746	03/08/1960	Mellen, Walter R.				

#### Foreign Patent Documents

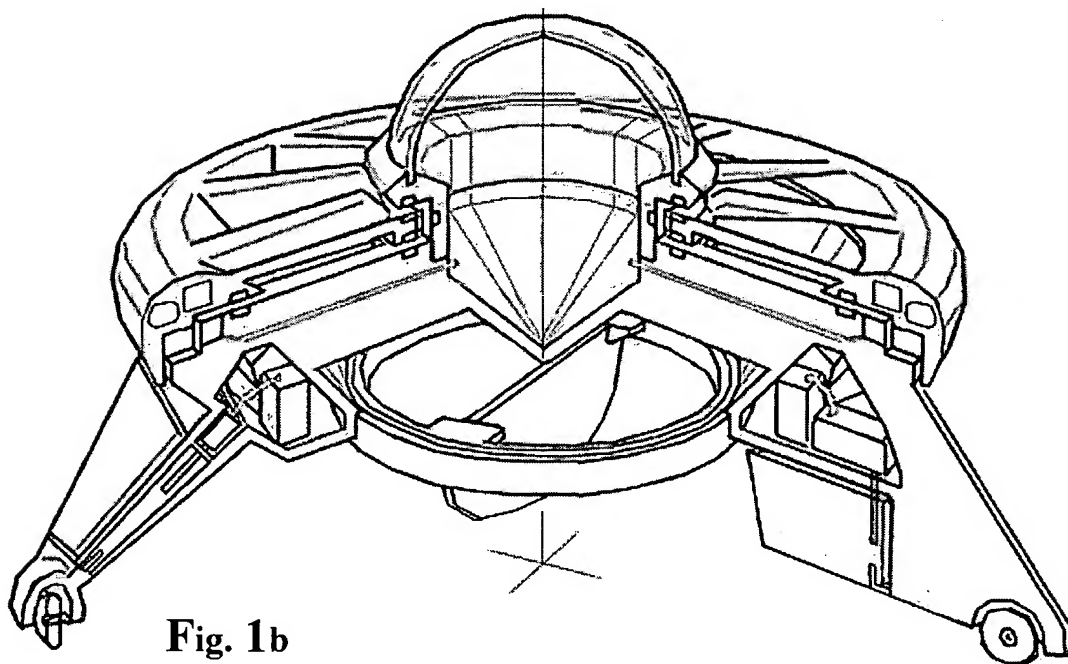
	1962058	Jun., 1971	DE.
	1331655	Sep., 1973	GB.
25	339462	Apr., 1936	IT.
	2012512	May., 1994	RU.
	2012511	May., 1994	RU.
	263084	May., 1964	NL 244/12.
	2922221	Dec., 1980	DE 244/23.
30	WO 92/01603	Feb., 1992	WO.
	6254032	July., 2001	CH.

#### Abstract

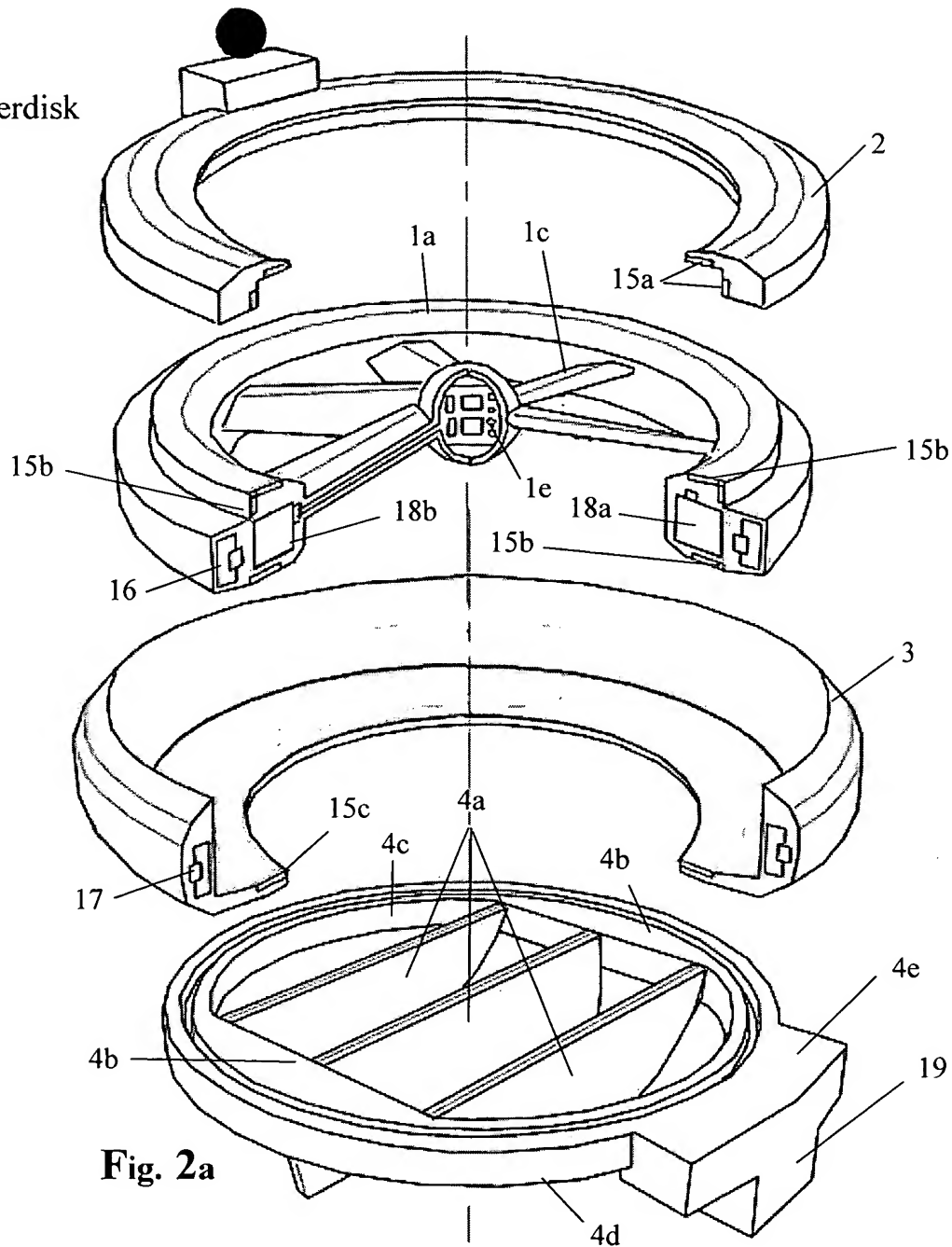
- 35 Unusual Flying Object (UFO) with Vertical Take Off and Landing (VTOL) capabilities including forward flight with a quiet electric, battery powered, Linear Induction Magnetic Bearings (LIMB) power drive used for, manned or unmanned, small cargo transport, recreational vehicle or aerial
- 40 surveillance; aerial reconnaissance, coastal surveillance, law enforcement, traffic management, estate or park patrol, geographical or geological survey, border or pipeline patrol, communications relay platform, search and rescue, media coverage support. The invention is capable of modifications in
- 45 various respects, all without departing from the invention. Accordingly, the drawings and the description are to be regarded as illustrative in nature, and not as restrictive.



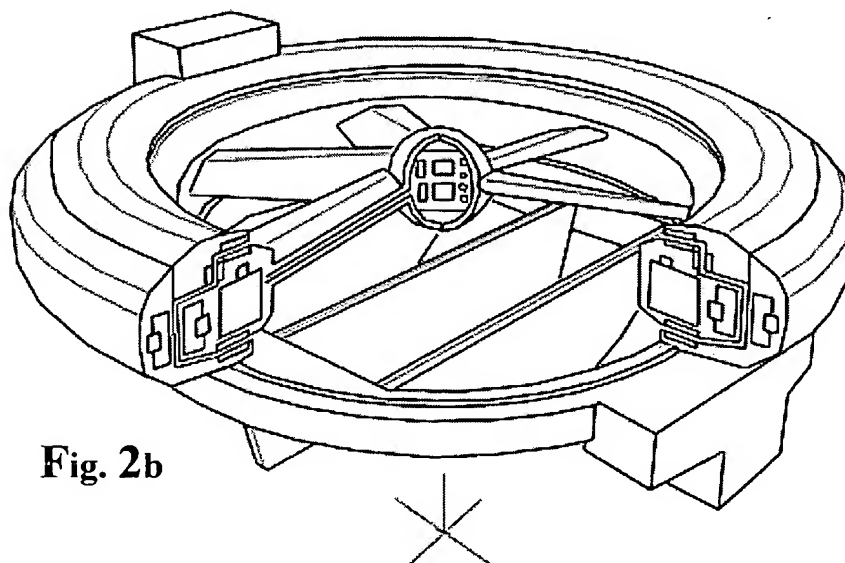
**Fig. 1a**



**Fig. 1b**



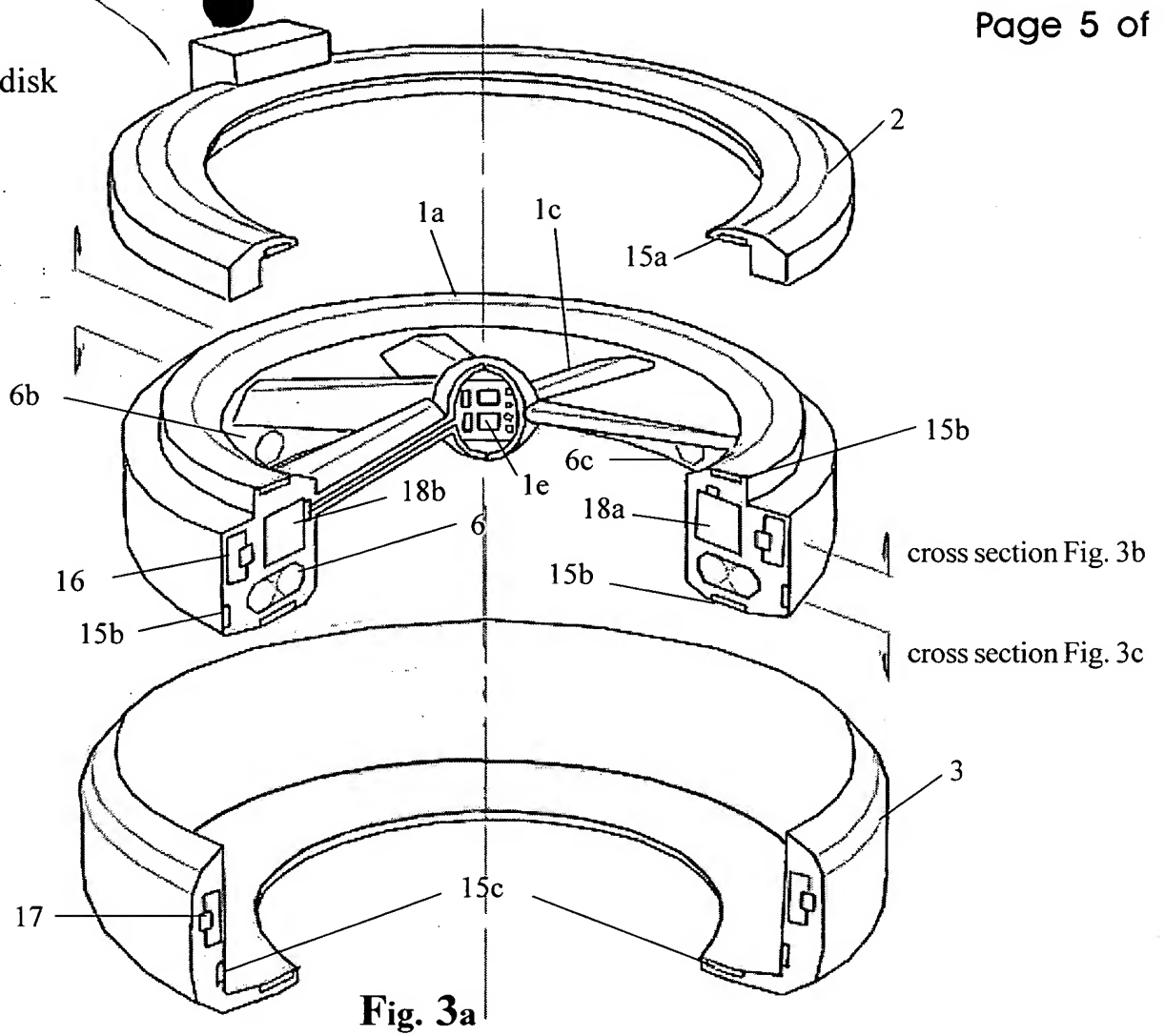
**Fig. 2a**



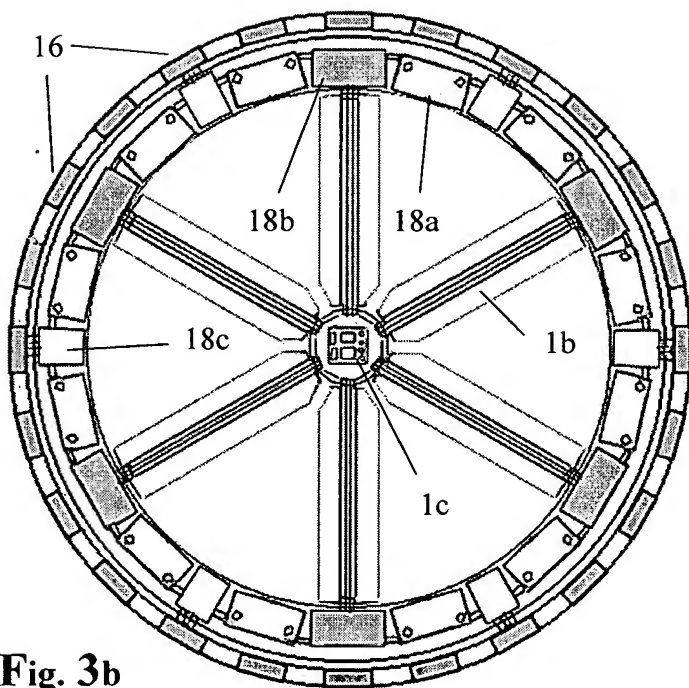
**Fig. 2b**

**UFOz**

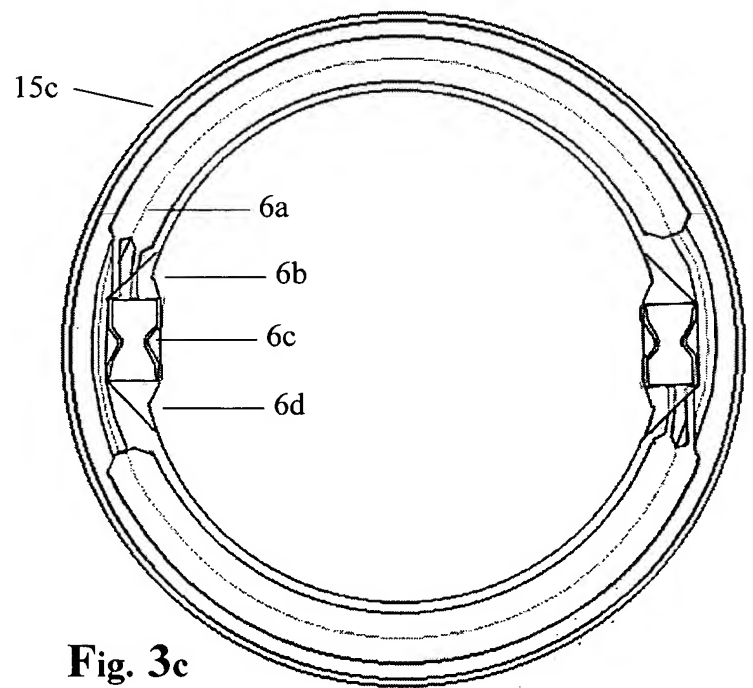
shrouded impeller disk  
(with liquid fuel jets)



**Fig. 3a**

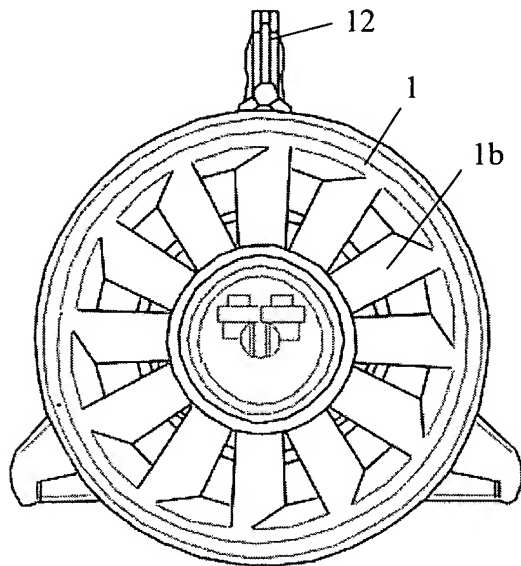


**Fig. 3b**

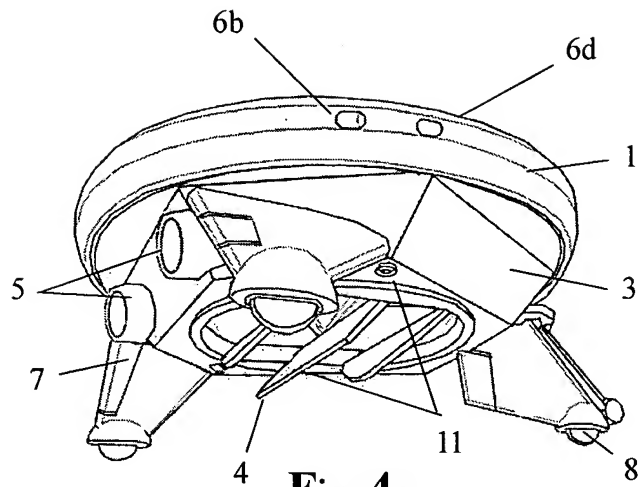


**Fig. 3c**

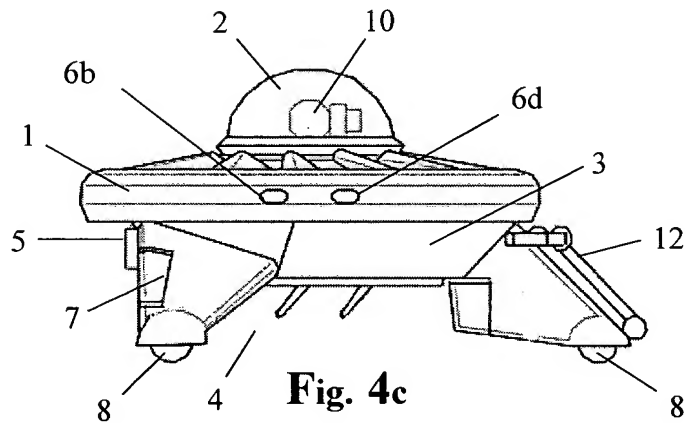




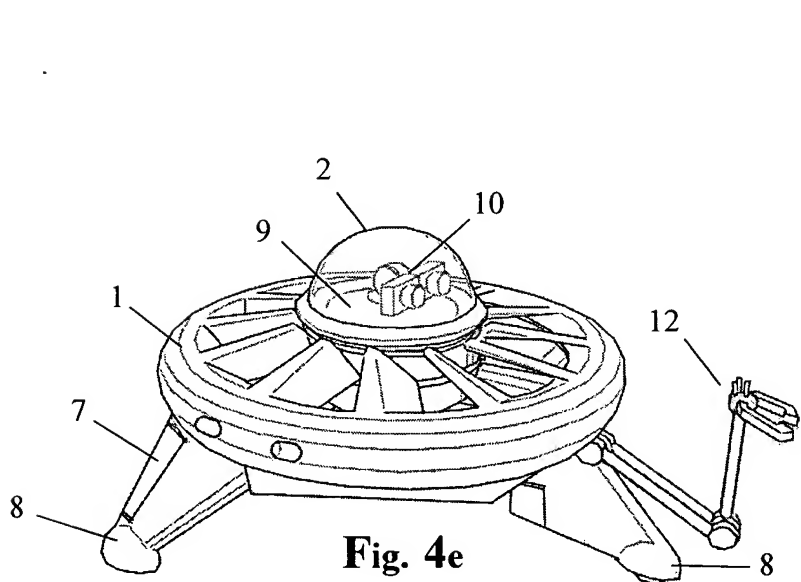
**Fig. 4b**



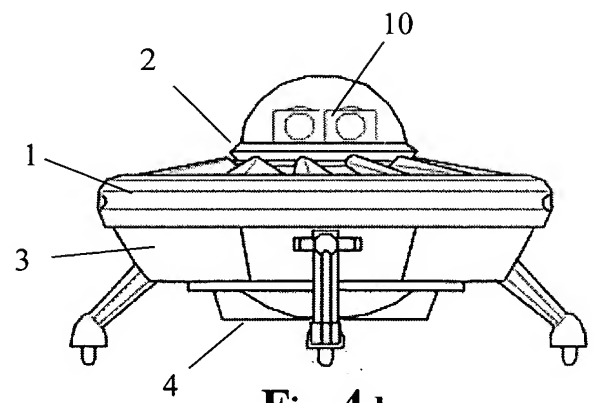
**Fig. 4a**



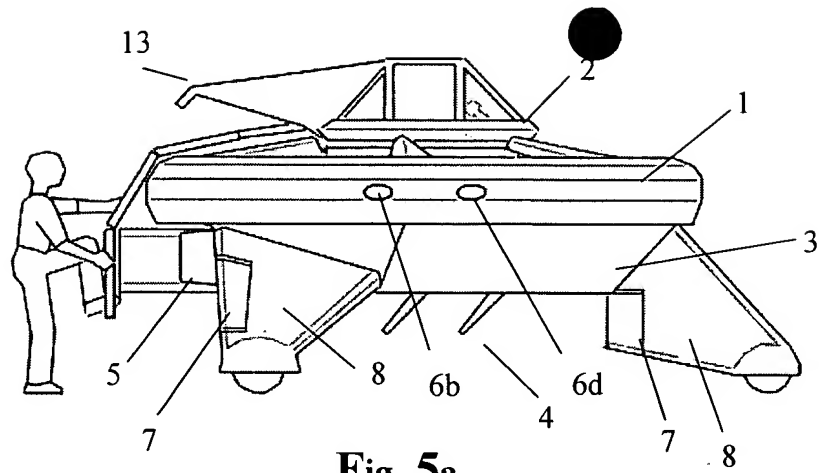
**Fig. 4c**



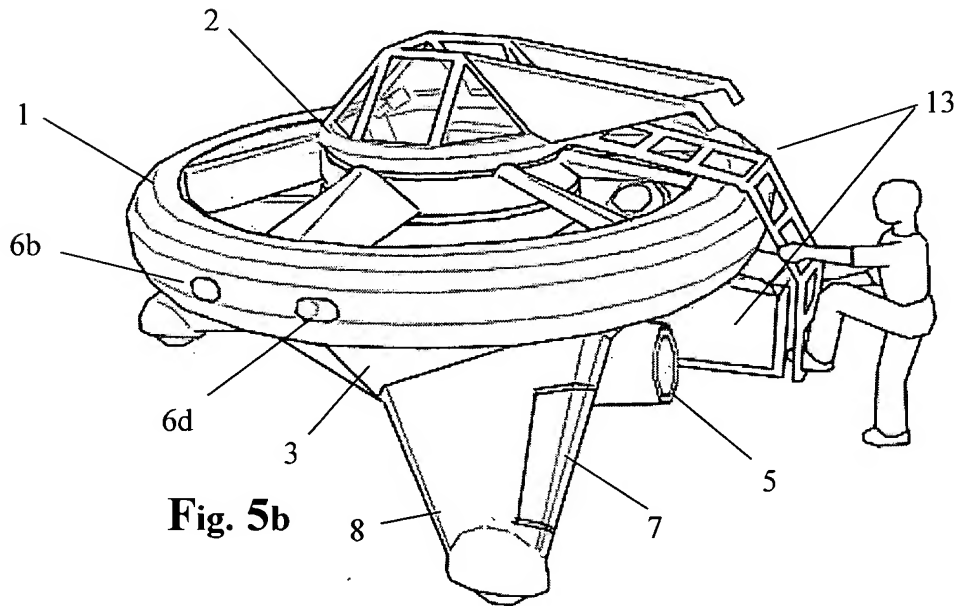
**Fig. 4e**



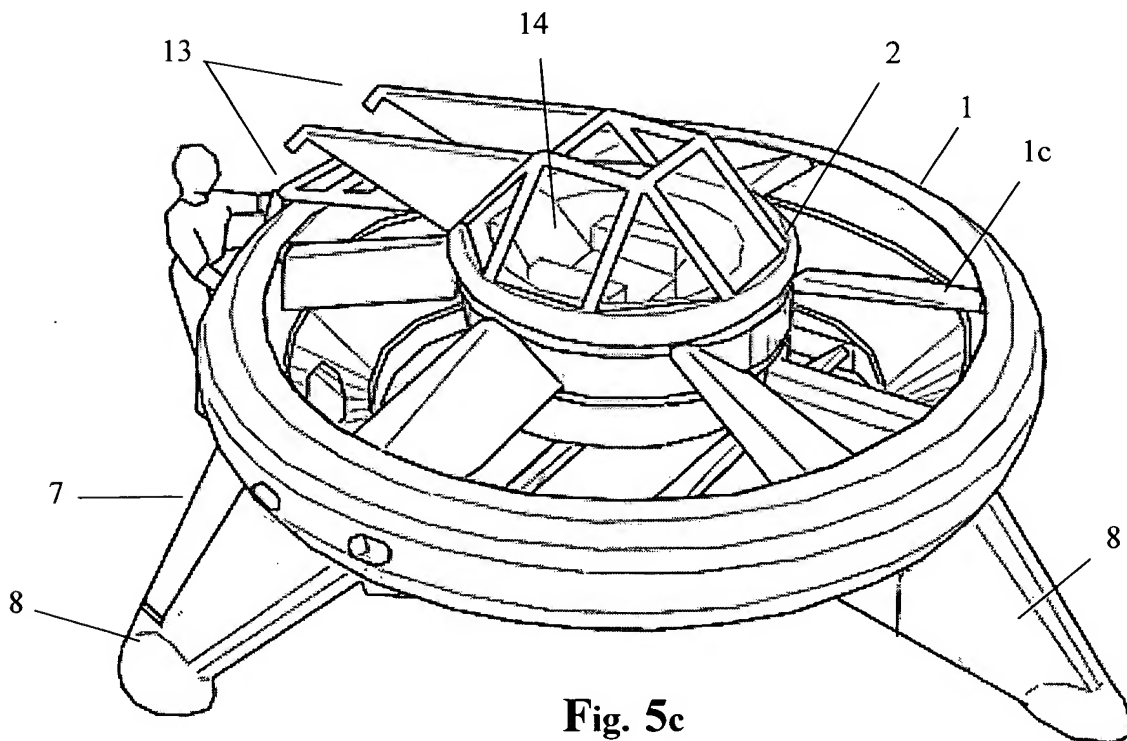
**Fig. 4d**



**Fig. 5a**



**Fig. 5b**



**Fig. 5c**

# UFOz

huverbot with 2 vertically stacked shrouded impellerdisks

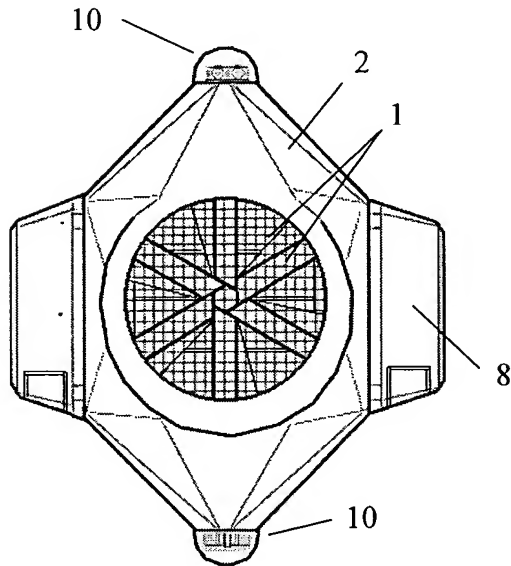


Fig. 6b

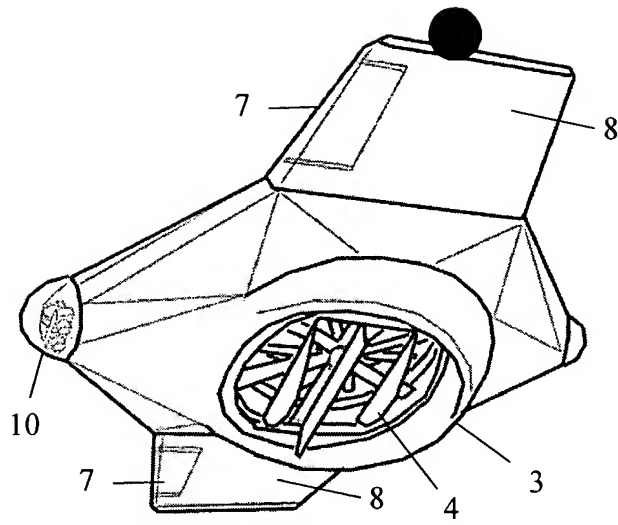


Fig. 6a

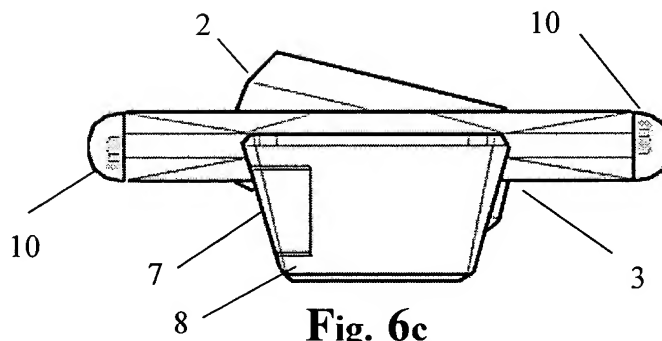


Fig. 6c

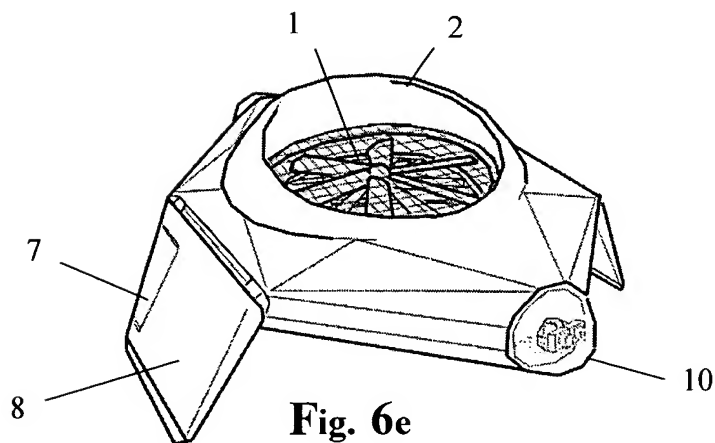


Fig. 6e

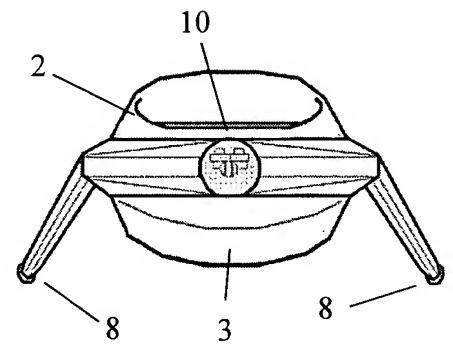
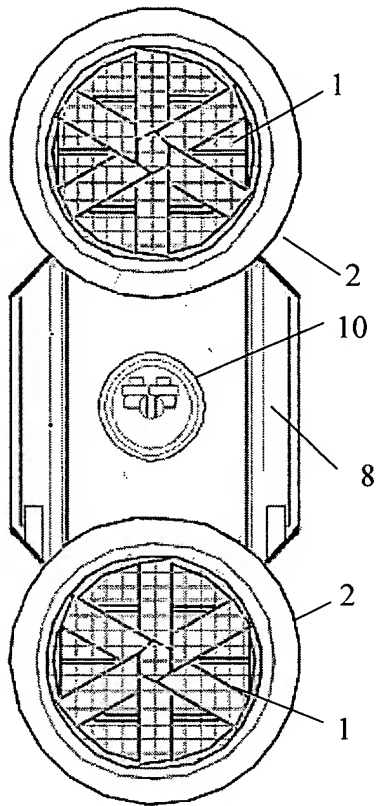


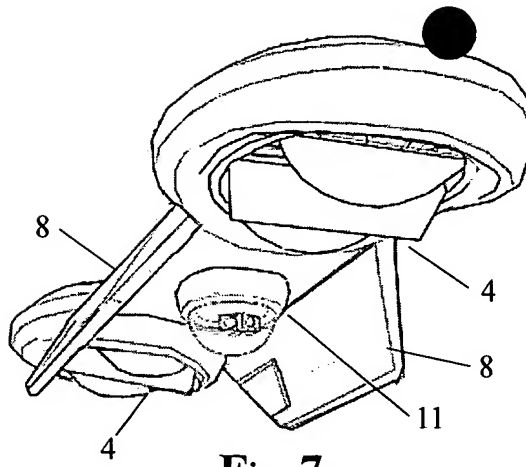
Fig. 6d

# UFOz

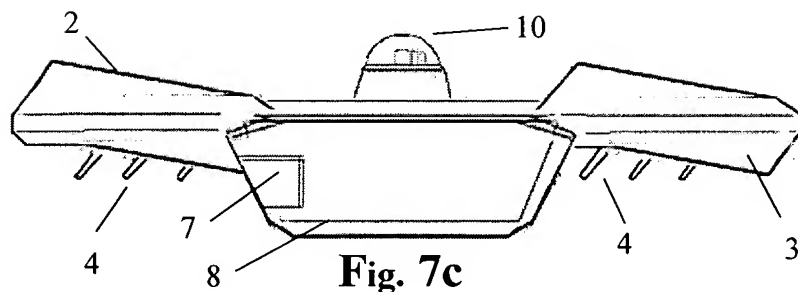
hoverbot with 2 horizontally spaced shrouded impeller disks



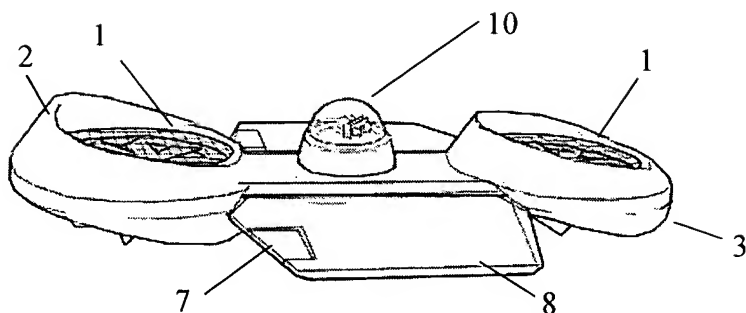
**Fig. 7b**



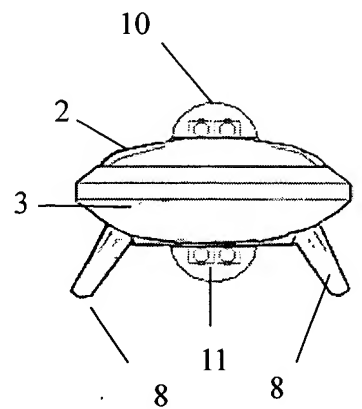
**Fig. 7a**



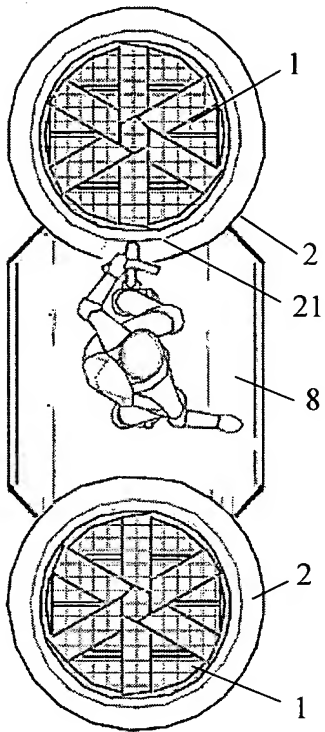
**Fig. 7c**



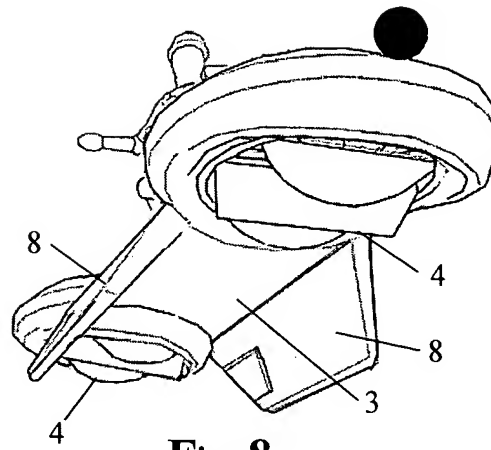
**Fig. 7e**



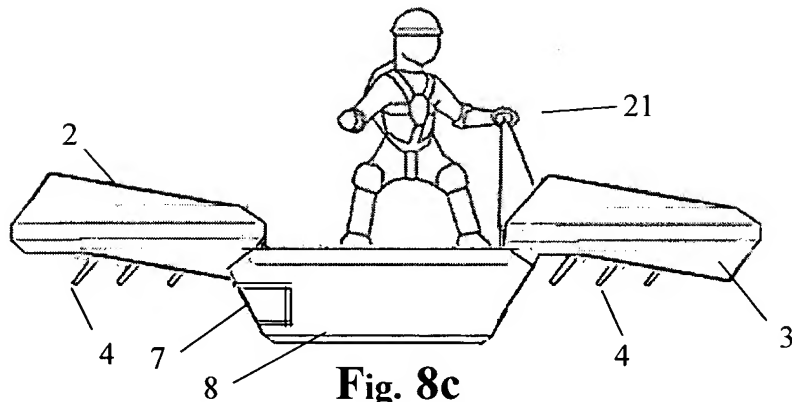
**Fig. 7d**



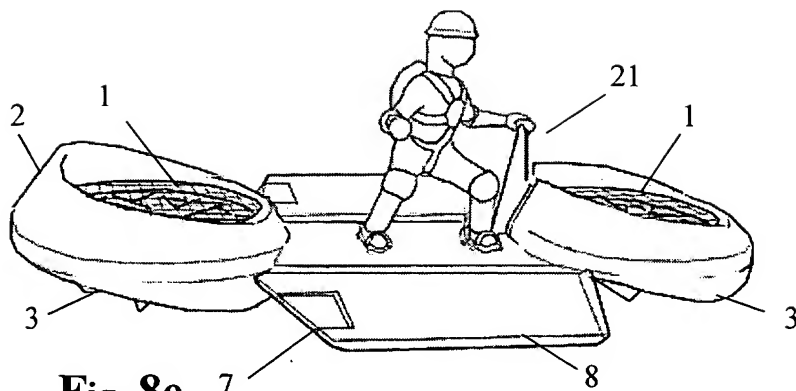
**Fig. 8b**



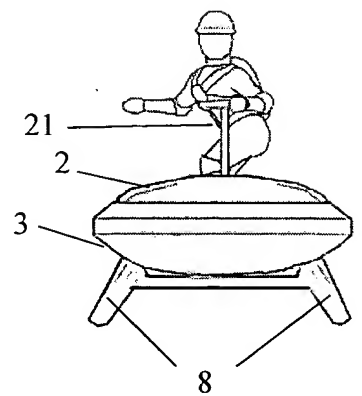
**Fig. 8a**



**Fig. 8c**

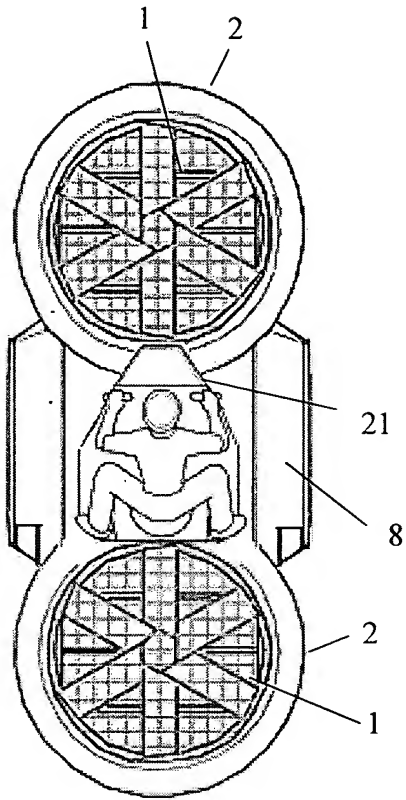


**Fig. 8e**

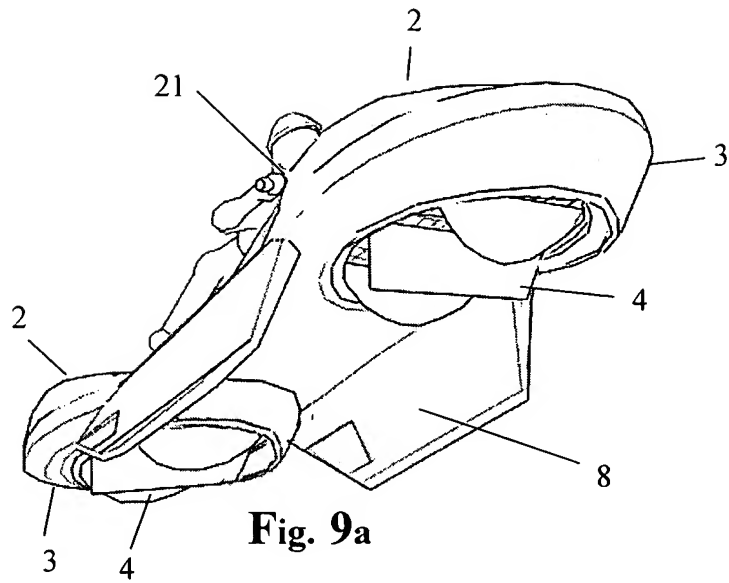


**Fig. 8d**

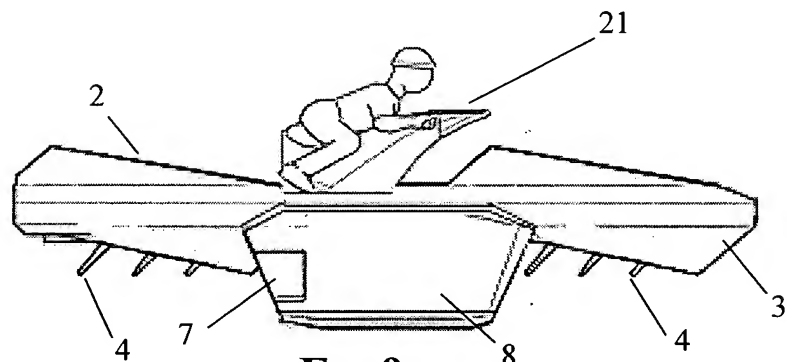
hoverbike with 2 shrouded  
impellerdisks



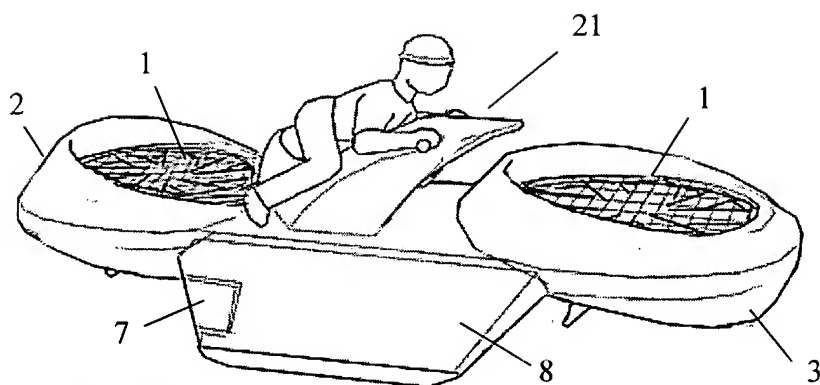
**Fig. 9b**



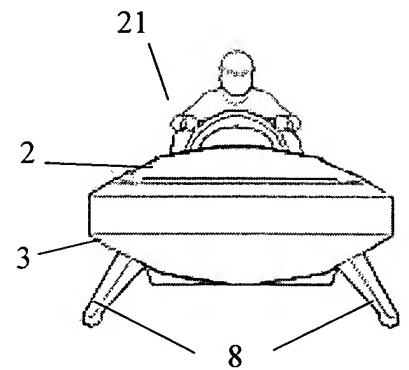
**Fig. 9a**



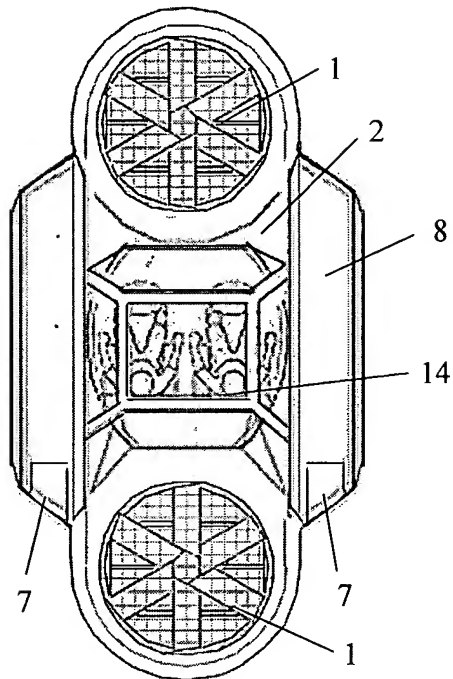
**Fig. 9c**



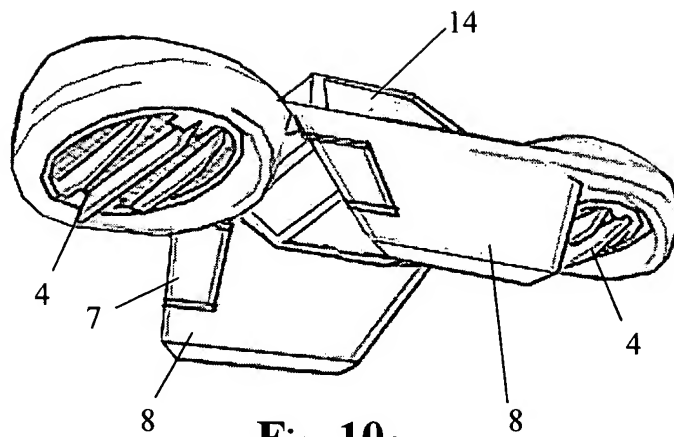
**Fig. 9e**



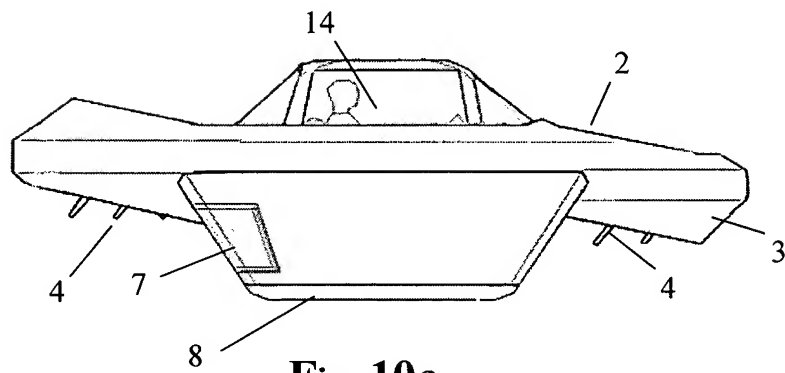
**Fig. 9d**



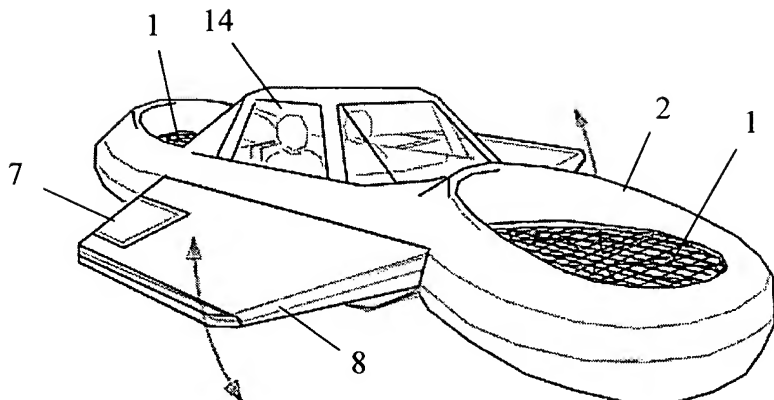
**Fig. 10b**



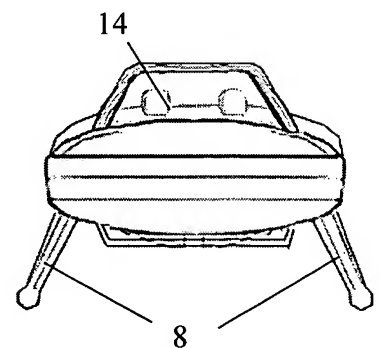
**Fig. 10a**



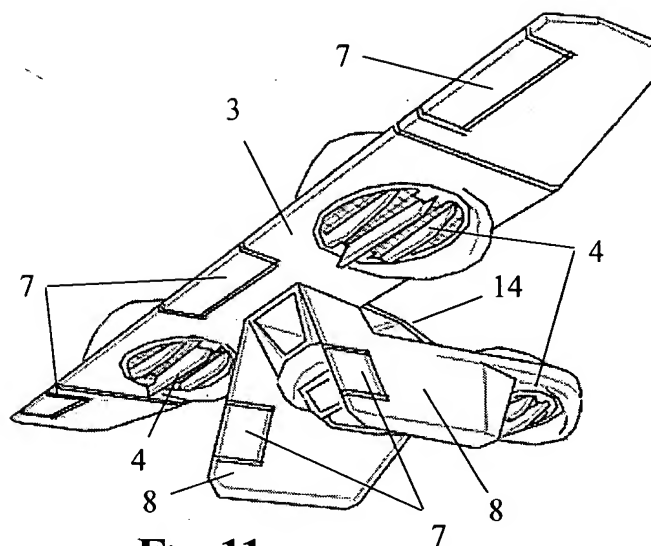
**Fig. 10c**



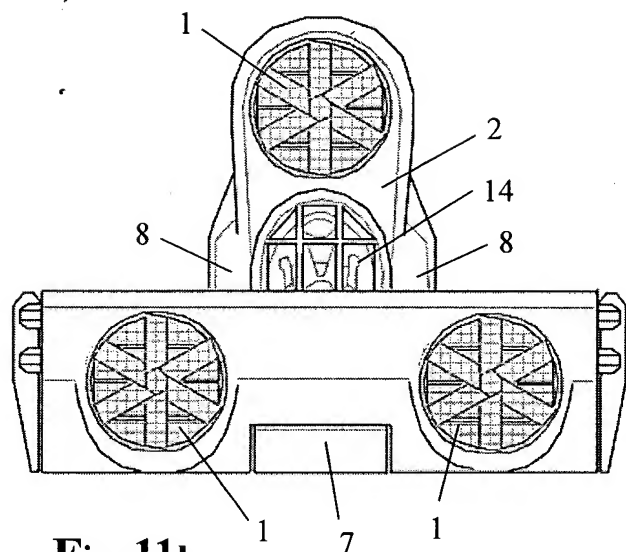
**Fig. 10e**



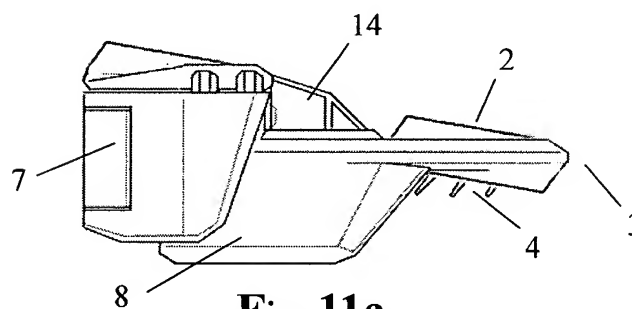
**Fig. 10d**



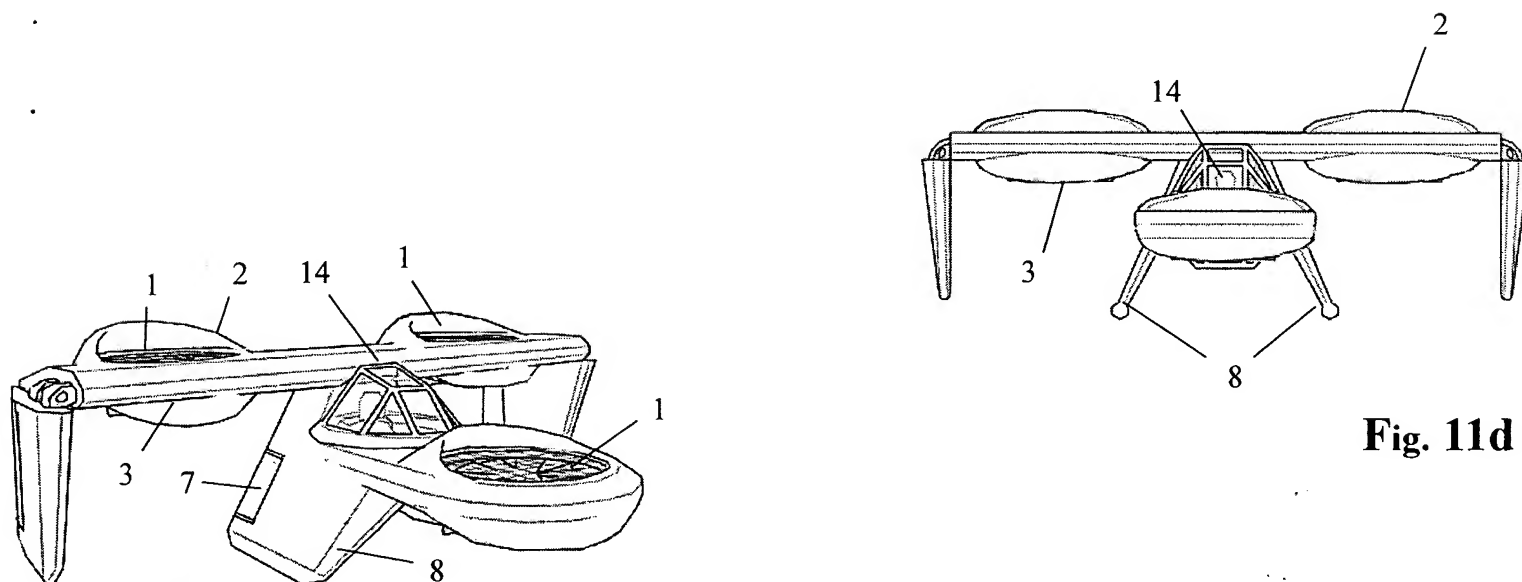
**Fig. 11a**



**Fig. 11b**



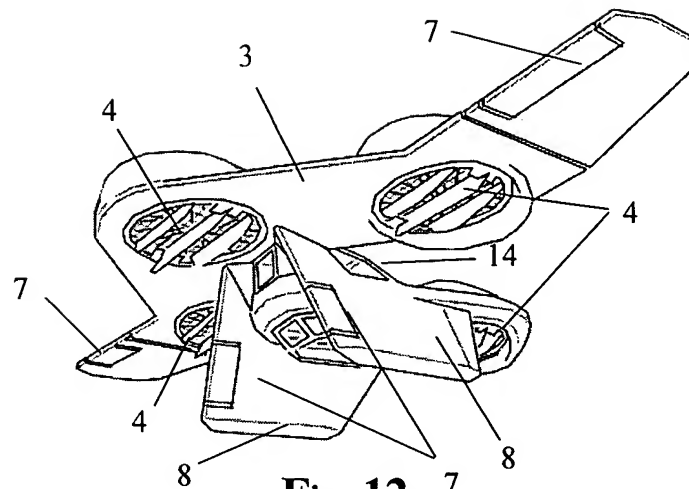
**Fig. 11c**



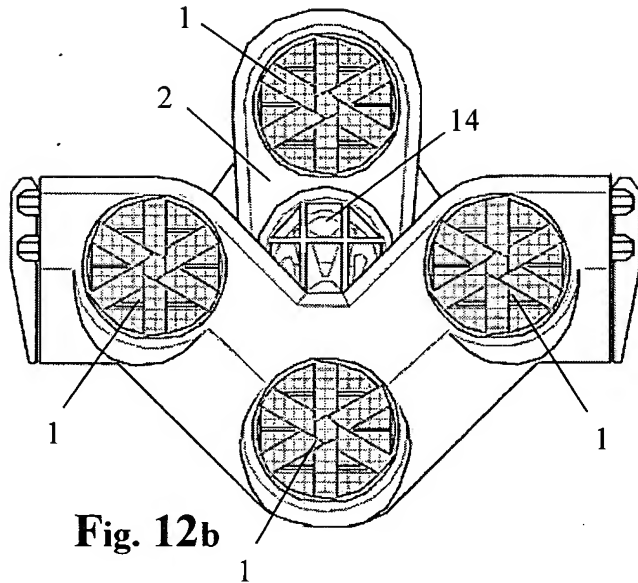
**Fig. 11d**

**Fig. 11e**

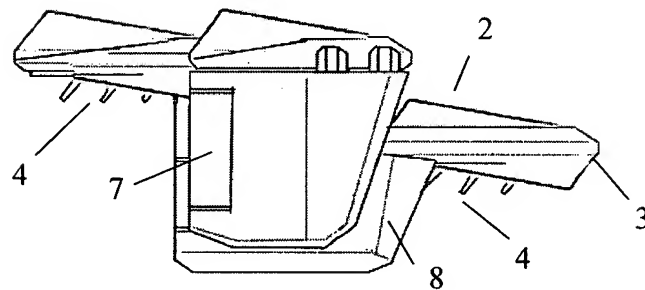




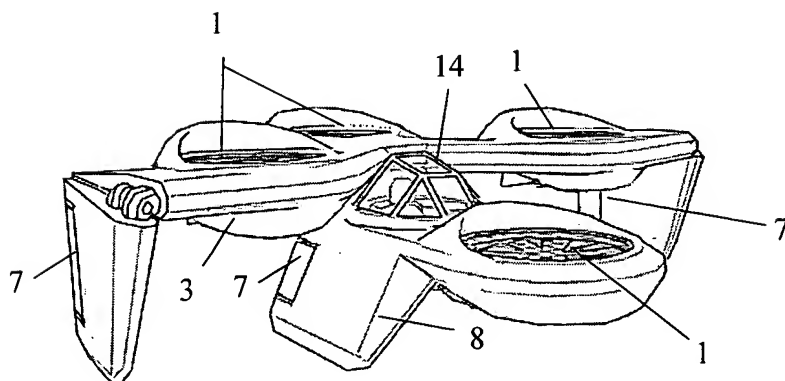
**Fig. 12a**



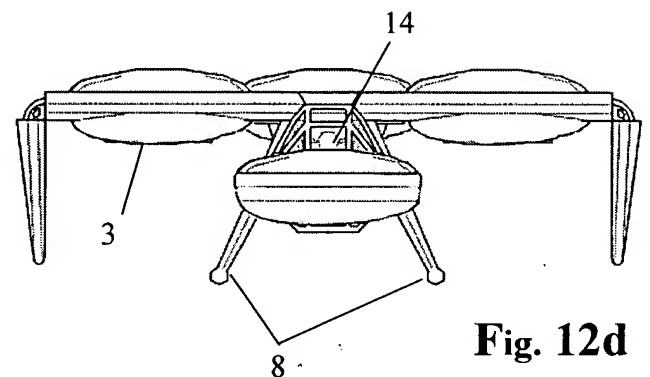
**Fig. 12b**



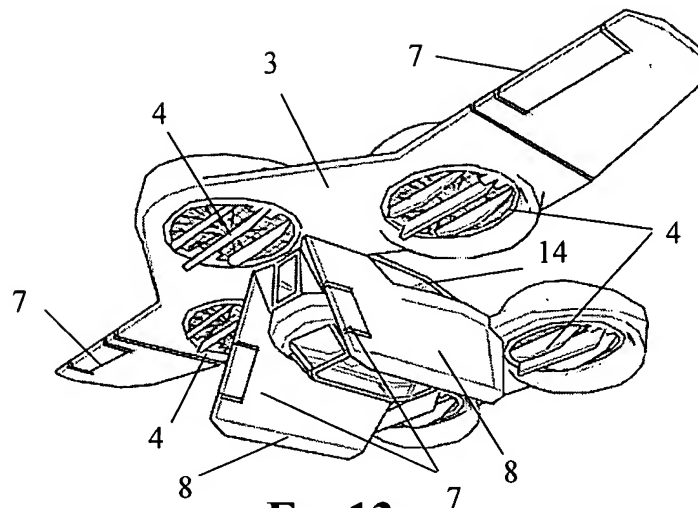
**Fig. 12c**



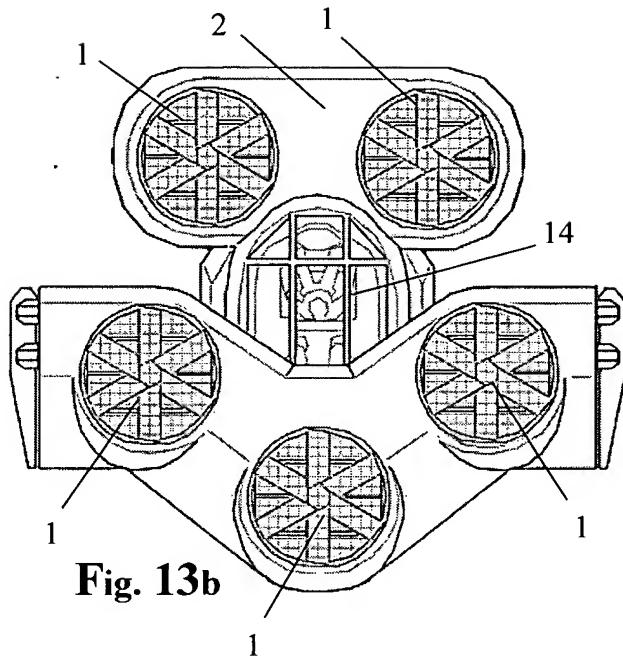
**Fig. 12e**



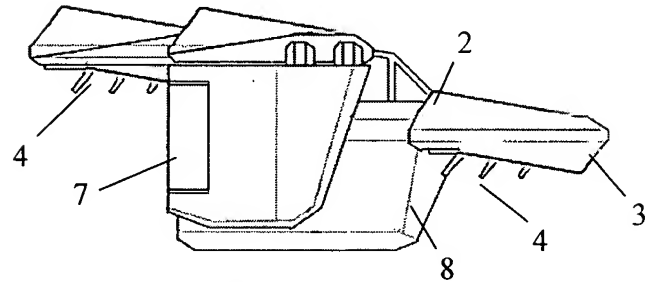
**Fig. 12d**



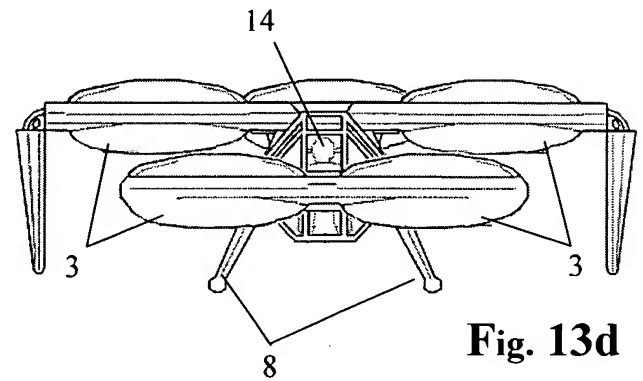
**Fig. 13a**



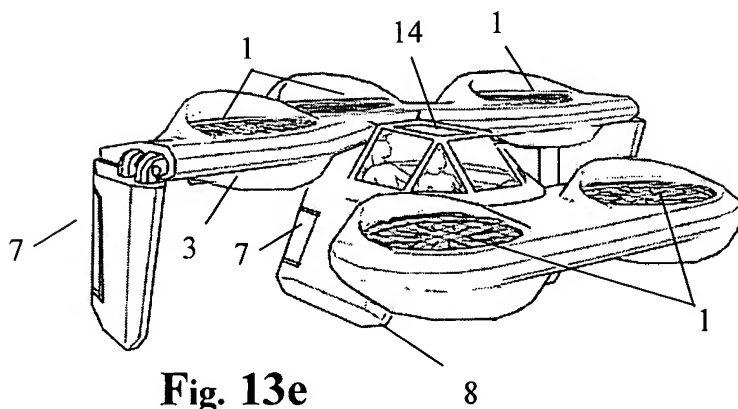
**Fig. 13b**



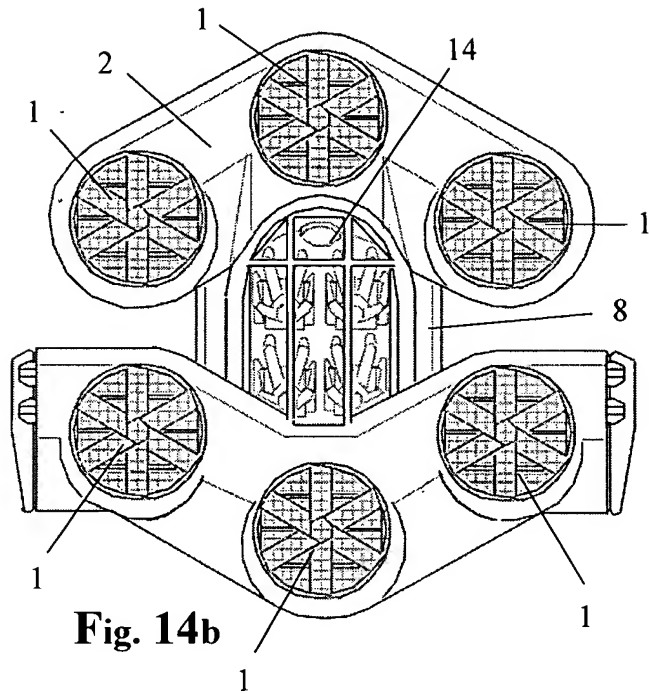
**Fig. 13c**



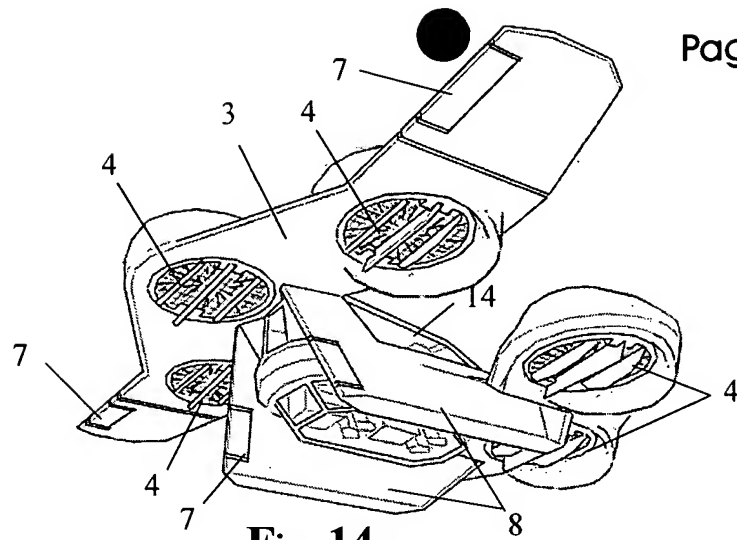
**Fig. 13d**



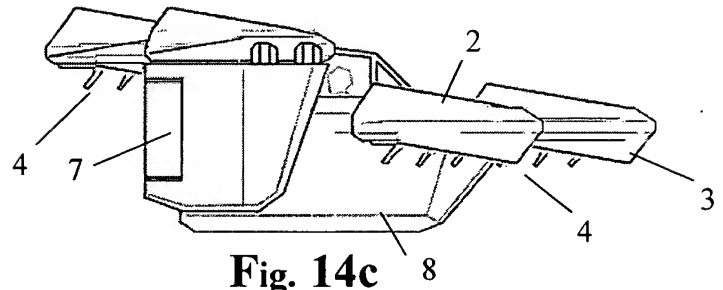
**Fig. 13e**



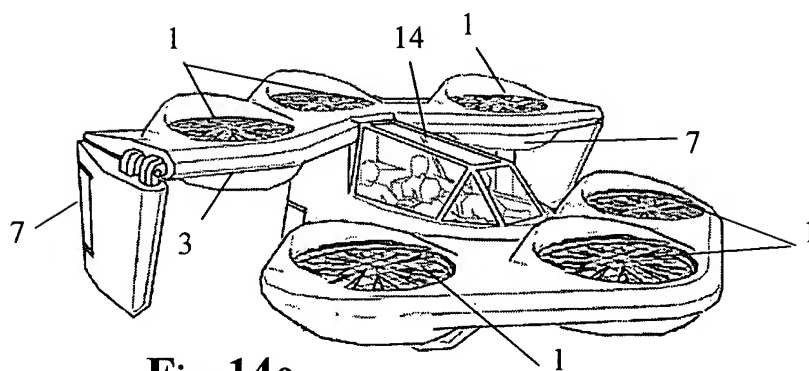
**Fig. 14b**



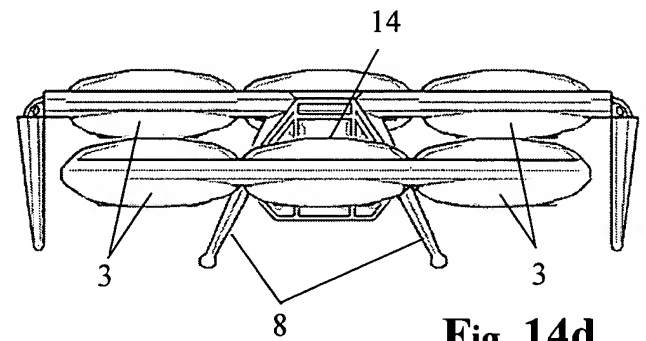
**Fig. 14a**



**Fig. 14c**



**Fig. 14e**



**Fig. 14d**

## Claims

What is claimed is:

1. A VTOL UFO comprising:

a fuselage having a partial toroidal body having a top, front, rear and bottom ends and a duct, or ducts, extending between the top and bottom surfaces, the fuselage having a longitudinal axis.

a propellerdisk and means, or a series of shrouded impellerdisks and means located in said duct, or ducts, for rotation about its axis, drive means to provide lift for said aircraft. the propellerdisk, or impellerdisks, having a plurality of fixed or variable pitch blades emanating from a central hub to an outer discoidal ring.

a series of three hollowed support struts emanating from an inner cone out to the inner wall of the toroidal body for supporting a cone shaped cargo area within the duct and house power and communication cables on embodiments having a single propellerdisk.

a vane system located in line with said duct below said propellerdisk, or impellerdisks, for controlling the direction of the developed air flow from said bottom openings.

at least a pair of fixed or rotating wings attached to said fuselage, at least a portion of the wings being pivotable with respect to the fuselage for flight control.

a landing gear; wheels, pontoons or rails attached to said fuselage.

2. A VTOL UFO of claim 1, comprising: an electric power drive, said drive means comprises: a series of permanent magnets in a bearing system to levitate said propellerdisk, or impellerdisks, at all times and a computer controlled linear induction magnetic bearing located in outer ring of said propellerdisk, or impellerdisks reacting to linear actuators located in said fuselage, used to rotate said propellerdisk, or impellerdisks and provide lift.

3. A VTOL UFO of claim 1 comprising: vents located at said rear end of embodiments using a single propellerdisk, with means for opening and closing to provide horizontal thrust for use in moving said aircraft in a forward direction.

4. A VTOL UFO according to claim 1 wherein the wings

include a fixed or rotating portion, and wherein the pivotable portion is a flaperon which is hingedly attached to the aft of the fixed portion and is pivotable with respect to it.

5. A VTOL UFO according to claim 4 further comprising a servo actuator mounted within the fixed portion and engaged with the flaperon for controlling its actuation.

6. A VTOL UFO according to claim 1 further comprising at least one directional vane assembly mounted to and within the shroud downstream from the blades, the directional vane assembly having an outer ring and inner ring bearing being pivotable with respect to the shroud for providing directional control over the flow exiting the duct. At least one adjustable vane with means is connected to the rotatable inner ring for providing additional directional control over the flow exiting the duct.

### Technical Field

The present invention relates to manned and unmanned aerial vehicles (UAVs). In particular to a vertical takeoff and landing (VTOL) unusual flying objects (UFOs) having a ducted propellerdisk or series of shrouded impellerdisks for providing zero and low speed horizontal and vertical thrust, and wings with vertical and horizontal stabilizers and air flow vane assembly for providing forward translational lift and thrust in high-speed flight.

### Background Of The Invention

There are generally three types of VTOL configurations under current development, a wing type configuration (a fuselage with rotatable wings and engines or fixed wings with vectored thrust engines for vertical and horizontal translational flight), helicopter type configuration (a fuselage with a rotor mounted above which provides lift and thrust) and ducted type configuration (a fuselage with a ducted rotor system which provides translational flight, as well as vertical take-off and landing capabilities).

There is a long list of related inventions, but the most notable pioneers include the Focke-Wulf Fw 61 helicopter in 1936, Piasecki's G-1 tilt rotor in 1951 and Hiller who developed their first flying platform on the basis of a contract awarded in late 1953 by the Office of Naval Research (ONR) for a one-man flying platform. The machine made its first flight in February 1955, and was named the "VZ-1 Pawnee". The Piasecki Air Jeep, U.S. Pat. No. 2,282,612, developed and flown under the U.S. Army/Navy contracts between 1957



and 1962. In the 1960's Wendell Moore developed the wellknown Rocket Belt which can still be seen at various air shows to this day. The VZ-9-AV Avrocar, U.S. Pat. No. 3,062,482, was funded by both the US Army and US Air Force and was known for it's disk shape which looked very much like a scaled-up modern "Frisbee" toy. Dr. Moller has several designs, his most notable being his M200x, U.S. Pat. No. 3,410,507, for it's flying saucer disk shape and use of multiple engines. Which lead to his series of small ducted fan UAVs, known as Aerobots, U.S. Pat. No. 4,795,111, using a single fan or eight ducted fans, powered by rotary engines. The Airborne Remotely Operated Device (AROD) was a small ducted fan vertical-take-off-and-landing (VTOL) developed by Moller as a subcontractor to Perceptronics, was electrically powered, with power supplied through a tether from the ground station. Which has inspired Helicopter UAVs like the HoverCam can hover over a fixed spatial point and takeoff and land vertically but have limitations when operating in confined areas due to the exposed rotors rotating above the fuselage. And the Bell/Boeing Eagle Eye Tilt Rotor UAV, a scaled down versoin and derivative of the Bell/Boeing V-22 Osprey. In 1991 the HOVTOL UAV, U.S. Pat. No. 5,890,441, demonstrates twin high power engines capable of both vertical and horizontal flight using ducted fans primarily for vertical lift. And the Bombardier CL-327 Guardian VTOL UAV in 1996. It features dual, coaxial, contra-rotating, three bladed rotors. Its design is an evolution of the CL-227 Sentinel, and a follow-on concept, the CL-427 Puma has been proposed. In the late 1980s, Sikorsky Aircraft flew a small doughnut-shaped UAV named Cypher, U.S. Pat. No. 5,575,438, that was based on coaxial-rotor technology developed by the company in the early 1970s. The Cypher was clearly a flying platform in general concept. The doughnut-shaped shroud not only improved safety in handling the machine, it also helped increase lift. The Cypher II, U.S. Pat. No. 6,270,038, is of similar size to its predecessor, but has a pusher propeller along with its rotor and can be fitted to a configuration with wings for long-range reconnaissance missions.

Other than the electric motor tethered AROD, built by Dr. Moller, all past VTOLs, manned or unmanned, have delt with loud fuel burning engines as the means of propulsion and the weight issues that go with them. Which seperates all others from the current invention which uses new commercially available light weight quiet low voltage linear induction magnetic bearings simular to those used for monorails. To hover, the MAGLEV monorails requires less power than its air conditioning equipment. Most new rollercoasters use LIM/

LSM: LIM (Linear Induction Motor) and LSM (Linear Synchronous Motor) the two variations of electro-magnetic propulsion. They replace a traditional lift hill and do not contain any moving parts. Typically LIM/LSM systems launch the roller coaster from the station extremely quickly. the fastest at 0-100 in 7 seconds. The high energy density and rugged design of these motors allows their use in demanding installations requiring high duty cycle, high power, rapid acceleration, improved speed and increased performance. Position sensing and control techniques allow for extremely precise control of acceleration and deceleration to permit the safe transport of sensitive or fragile loads. The lack of moving parts and wearing elements (no brushes or sliding contacts) in these motors greatly increases their reliability.

## Description

### Summary of Invention

The aircraft is made up of 4 primary parts, the top cap of the main body, the propellerdisk (or impellerdisks), the main body (fuselage) and the bottom vane assembly, all built out of a light weight durable composite material. The main cargo area is created by the top cap and the center cone of the main body.

The aircraft uses a magnetic levitation (maglev) bearing system to suspend the propellerdisk (or impellerdisks) between the top cap and the main body at all times. The magnetic bearing system is created by a series of permanent magnet rings, located on the top cap, the propellerdisk (or impellerdisk) and the main body.

A linear induction magnetic power drive is located in the outer edge of the propellerdisk (or impellerdisks), reacting to linear induction acuators located in the main body, which is used to rotate the propellerdisk (or impellerdisks).

Vertical lift in the aircraft is produced by the propellerdisk (or impellerdisks) driving a column of air downwardly, through an annular thrust-flow channel which is formed in the main body of the aircraft.

The annular thrust-flow channel is provided with a flow control vented mechanism at the bottom which is capable of directing the developed air flow in varying orientations between a substantially vertical (axial) orientation for developing stationary, vertical lift (i.e., hovering) and a vectored (angled) orientation for developing a vertical component for producing lift and a horizontal component for producing forward (or



rearward) flight.

The aircraft's main body also has an aerodynamic shape which is capable of developing lift responsive to forward flight using fins and rudders.

The power drive runs on light weight batteries, with a variety of optional rechargers, by linear generators, by paper thin solar panels on the body of the aircraft or an external battery charger. The battery industry, which is being driven by the electric transportation and portable consumer electronics industries, is making a substantial investment in battery technology. We will closely monitor the state of the art and will utilize the best available technology when the system design is finalized. Promising technologies include: nickel metal hydride, lithium-ion, and zinc-air.

Hybrid variations will include liquid fuel booster jets in the propellerdisk (or impellerdisks) to gain increased power during vertical take off, which will increase flight endurance.

Unmanned surveillance aircraft will use a standardized teleoperation system (STS) & standardized robotic system (SRS) to control flight & manage audio/video information. Payload consists of the sensor suite, onboard controller, communications, and battery power pack. All communication between the platform and the control station passes through the mission payload.

The body shape and size of the aircraft is determined by the size and weight of the maglev power drive which is determined by the cargo (batteries, remote control servos, cpu and cameras).

### Advantages of Invention

VTOL UFOs use linear induction magnetic bearings (LIMB) which are ideally suited for propulsion where as they provide superior value compared to other traditional types (ie. gasoline fueled engines and jet turbines). Value is a function of the following:

**Lightweight-** A LIMB power drive can weigh less than 1/20 of a conventional engine.

**High Reliability-** With magnetic bearings there is no contact between the rotating and stationary parts, meaning there is no wear. These components have design lives far greater than that of conventional bearings and engines. Magnetic bearings are providing high reliability and long service intervals in time

critical applications in semiconductor manufacturing, vacuum pumps, and natural gas pipeline compression equipment.

**Clean Power-** In a magnetic bearing system, polluting exhaust, particle generation due to wear and the need for lubrication are eliminated. There is no gas, oil, grease or solid particles.

**High Speed-** The fact that a rotor spins in space without contact with the stator means drag on the rotor is minimal. That opens up the opportunity for the bearing to run at exceptionally high speeds, where the only limitation becomes the yield strength of the rotor material. Magnetic bearings have been designed with surface speeds up to 250 m/s or 4.5 million DN, where DN is the diameter of the rotor (mm) times the rotational speed (rpm). In order to achieve one quarter of this kind of speed with conventional bearings, a complex lubrication system is required. No other type of bearing, can match magnetic bearings for sheer speed.

**Position and Vibration Control-** Magnetic bearings use advanced control algorithms to influence the motion of the shaft and therefore have the inherent capability to precisely control the position of the shaft within microns and to virtually eliminate vibrations.

**Extreme Conditions-** The magnetic bearing system, is capable of operating through an extremely wide temperature range. Some have applications as low as -256°C and as high as 220°C, thus allowing operation where traditional bearings will not function. Magnetic bearings can also operate in vacuum where their operation is even more efficient due to lack of windage.

### Brief Description of Drawings

FIG. 1A is an exploded cut away perspective view of a single propellerdisk, an embodiment of a VTOL UFO according to the present invention. Fig. 1b is the compiled cut away perspective view of fig. 1a showing the top of the fuselage (2), the propellerdisk (1), the bottom of the fuselage (3), the vane assembly (4) and how they relate to each other.

FIG. 2A is an exploded cut away perspective view of a single impellerdisk, an embodiment of a VTOL UFO according to the present invention. Fig. 2b is the compiled cut away perspective view of fig. 2a showing the top of the fuselage (2), the impellerdisk (1), the bottom of the fuselage (3), the vane assembly (4) and how they relate to each other.

FIG. 3A is an exploded cut away perspective view of a single



impellerdisk with liquid fuel jets, an embodiment of a VTOL UFO according to the present invention. Fig. 3b is the cross section view of fig. 3a showing the linear induction maglev bearing(16), battery assembly (18a), variable pitch motors (18b), linear generators (18c) and how they relate to each other. Fig. 3c is the cross section view of fig. 3a showing the liquid fuel jets.

FIG. 4A is a lower rear perspective view of a single propellerdisk, an embodiment of an unmanned VTOL UFO according to the present invention. Fig. 4b is the top view of fig. 4a. Fig. 4c is the side view of fig. 4a. Fig. 4d is the front view of fig. 4a. Fig. 4e is an upper front perspective view of fig. 4a.

FIG. 5A is a side view of a single propellerdisk, an embodiment of a manned VTOL UFO according to the present invention, displaying the cockpit access ladder assembly (13). Fig. 5b is an upper rear perspective view of fig. 5a. and fig. 5c is an upper front perspective view of fig. 5a.

FIG 6A is a lower rear perspective view of a pair of vertically joined counter rotating impellerdisks, an embodiment of an unmanned VTOL UFO according to the present invention, displaying a hoverbot configuration. Fig. 6b is the top view of fig. 6a. Fig. 6c is the side view of fig. 6a. Fig. 6d is the front view of fig. 6a. Fig. 6e is an upper front perspective view of fig. 6a.

FIG 7A is a lower front perspective view of a pair of joined counter rotating impellerdisks, an embodiment of an unmanned VTOL UFO according to the present invention, displaying a hoverbot configuration. Fig. 7b is the top view of fig. 7a. Fig. 7c is the side view of fig. 7a. Fig. 7d is the front view of fig. 7a. Fig. 7e is an upper rear perspective view of fig. 7a.

FIG 8A is a lower front perspective view of a pair of joined counter rotating impellerdisks, an embodiment of a manned VTOL UFO according to the present invention, displaying a hoverboard configuration with a handlebar flight control assembly (21). Fig. 8b is the top view of fig. 8a. Fig. 8c is the side view of fig. 8a. Fig. 8d is the front view of fig. 8a. Fig. 8e is an upper rear perspective view of fig. 8a.

FIG 9A is a lower front perspective view of a pair of joined counter rotating impellerdisks, an embodiment of a manned VTOL UFO according to the present invention, displaying a hoverbike configuration with a handlebar flight control assem-

bly(21). Fig. 9b is the top view of fig. 9a. Fig. 9c is the side view of fig. 9a. Fig. 9d is the front view of fig. 9a. Fig. 9e is a side perspective view of fig. 9a.

FIG 10A is a lower front perspective view of a pair of joined counter rotating impellerdisks, an embodiment of a manned VTOL UFO according to the present invention, displaying a hoverpod configuration with a cockpit (14). Fig. 10b is the top view of fig. 10a. Fig. 10c is the side view of fig. 10a. Fig. 10d is the front view of fig. 10a. Fig. 10e is an upper rear perspective view of fig. 10a.

FIG 11A is a lower rear perspective view of three joined impellerdisks, an embodiment of a manned VTOL UFO according to the present invention, displaying an aircraft configuration with a cockpit (14). Fig. 11b is the top view of fig. 11a. Fig. 11c is the side view of fig. 11a. Fig. 11d is the front view of fig. 11a. Fig. 11e is an upper front perspective view of fig. 11a.

FIG 12A is a lower rear perspective view of four joined counter rotating impellerdisks, an embodiment of a manned VTOL UFO according to the present invention, displaying an aircraft configuration with a cockpit (14). Fig. 12b is the top view of fig. 12a. Fig. 12c is the side view of fig. 12a. Fig. 12d is the front view of fig. 12a. Fig. 12e is an upper front perspective view of fig. 12a.

FIG 13A is a lower rear perspective view of five joined impellerdisk, an embodiment of a manned VTOL UFO according to the present invention, displaying an aircraft configuration with a cockpit (14). Fig. 13b is the top view of fig. 13a. Fig. 13c is the side view of fig. 13a. Fig. 13d is the front view of fig. 13a. Fig. 13e is an upper front perspective view of fig. 13a.

FIG 14A is a lower rear perspective view of six joined impellerdisk, an embodiment of a manned VTOL UFO according to the present invention, displaying an aircraft configuration with a cockpit (14). Fig. 14b is the top view of fig. 14a. Fig. 14c is the side view of fig. 14a. Fig. 14d is the front view of fig. 14a. Fig. 14e is an upper front perspective view of fig. 14a.

#### Detailed Description Of The Preferred Embodiments

Referring now to the drawings wherein like reference characters identify corresponding or similar elements throughout the several views of the embodiments of the invention. Fig. 1





illustrates cut away perspective views, exploded and compiled, of one embodiment, using a single propellerdisk unmanned VTOL UFO according to the present invention. It includes a single propellerdisk (1), comprising of an outer discoidal ring (1a), a series of fixed propeller blades (1b), or a series of variable pitch propeller blades (1c) attached to the outer ring emanating from an inner hub ring (1c). The outer discoidal ring (1a) houses a permanent magnet ring (15b) used to levitate the propellerdisk a fraction of an inch from a permanent magnet ring (15c) in the fuselage (3). The outer discoidal ring (1a) also houses the linear induction magnetic bearing (16) used to rotate the propellerdisk reacting to the linear induction actuator ring (17) in the fuselage (3). The outer discoidal ring (1a) also houses a ring of batteries or a custom battery ring (18a), variable pitch motors (18b), and linear generators (18c) used to recharge the batteries. The outer discoidal ring also houses optional liquid fuel ram jet assemblies made up of fuel tanks (6a), intake vents (6b), combustion nozzles (6c), and exhaust vents (6d). The inner hub ring (1c) houses three permanent magnet rings (15b) used to levitate the propellerdisk a fraction of an inch from two permanent magnet rings (15a) in the top cap of the fuselage (2) and a permanent magnet ring (15c) in the fuselage (3). These permanent magnet rings (15a-c), which require no power, make up the bearing system needed to levitate the propellerdisk at all times including non-operation of the VTOL UFO. The top cap of the fuselage, in this unmanned single propellerdisk embodiment, is made up of a tinted plexiglass dome and a bottom ring that houses the two permanent magnet rings (15a). The top cap (2) attaches to the center cone (3b) of the main body of the fuselage (3) to create the permanent magnet bearing system. The area created within the top cap (2) and the center cone (3b) is the cargo area housing the central processing unit and battery assembly (9) and camera assembly (10). The central processing unit (9) controls all camera and flight control functions via a remote link (1e) to the linear induction magnetic bearing (16) and hard wire connections, emanating from the center cone (3b) through the hollowed struts (3a) connected to the inner wall of the outer toroidal fuselage (3), communicating with the linear induction actuator ring (17), the flight control stabilizer fins servos and batteries (7a), the rear vent servos and batteries (5), the bottom vane assembly servos and batteries (4b and 4e) and additional camera assemblies (11) all located in the toroidal fuselage (3). The bottom vane assembly's outer ring (4d) is attached to the fuselage at the bottom opening of the toroidal duct. A servo (4e) rotates the inner vane ring (4c) and a second servo (4b) rotates at least one vane (4a), (option, upto three vanes as shown in draw-

ings) to redirect the developed air flow in any direction. Rear vent assemblies (5) are located at rear of the toroidal fuselage to aid in forward thrust when opened. The VTOL UFO also has at least two attached wings with pivotable portions (7), used for flight control, which are combined with the pivoting landing gear, pontoons or rails (8). An optional telerobotic arm (12) could be attached to the front of the fuselage for special missions.

A ladder assembly (13) is demonstrated in Fig. 4A-C for entering the cockpit (14) of a manned single propellerdisk embodiments of the invention.

Other embodiments of the VTOL UFO demonstrate how multiple counter rotating propellerdisks can be joined by creating modular shrouded impellerdisks, in a variety of configurations combining them either vertically as shown in Fig 6a-e, or horizontally as shown in Fig. 7a-e. The center cone (3b of Fig. 1) is eliminated placing the cargo areas/payloads inbetween the horizontally joined impellerdisks. Instead of the top cap (2) and bottom fuselage (3) joining in the center hub, they now join around the outside crating a shrouded body around the impellerdisks (1), which now has a closed hub. Optional protective screens (20) can be added to the top and bottom openings of the toroidal duct.

Variations of multiple shrouded impellerdisks are demonstrated in Fig. 8a-e, Fig. 9a-e, Fig. 10a-e, Fig. 11a-e, Fig. 12a-e, Fig. 13a-e, and Fig. 14a-e. Some of which include foldable wing tips with pivotable portions (7) used for added flight control, joystick fly-by-wire flight controls (21), and or cockpits (14).

In addition to the VTOL UFO embodiments described and claimed above, in accordance with alternate embodiments of the invention, scaled up and/or down versions of any of the embodiments heretofore described may be employed for recreational or surveillance purposes, whether or not human subjects are conveyed thereupon or being used as remote controlled UAVs. The described embodiments of the invention are intended to be merely exemplary and numerous variations and modifications will be apparent to those skilled in the art. All such variations and modifications are intended to be within the scope of the present invention as defined.